

Solar Adoption in Utah

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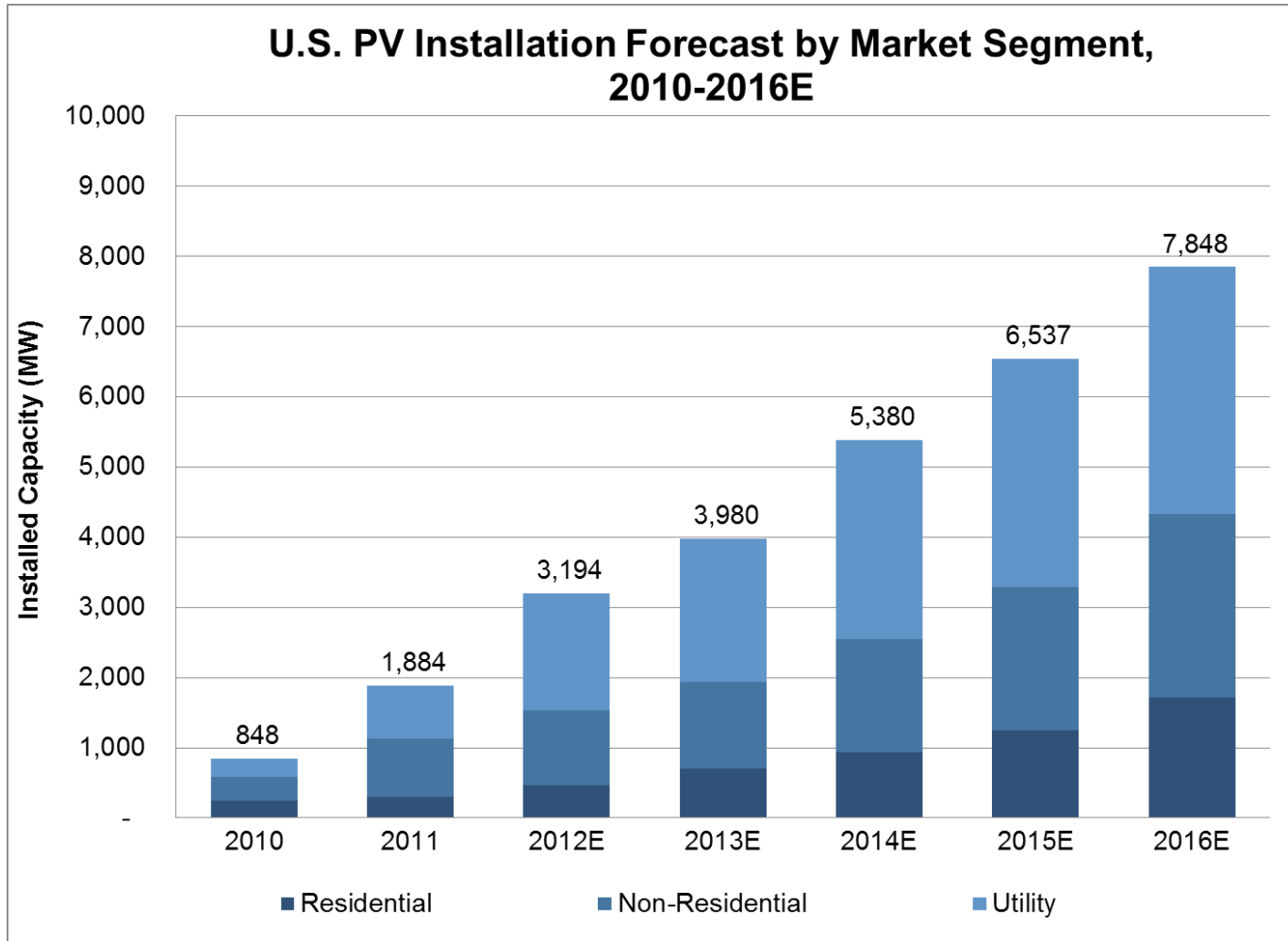
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Agenda

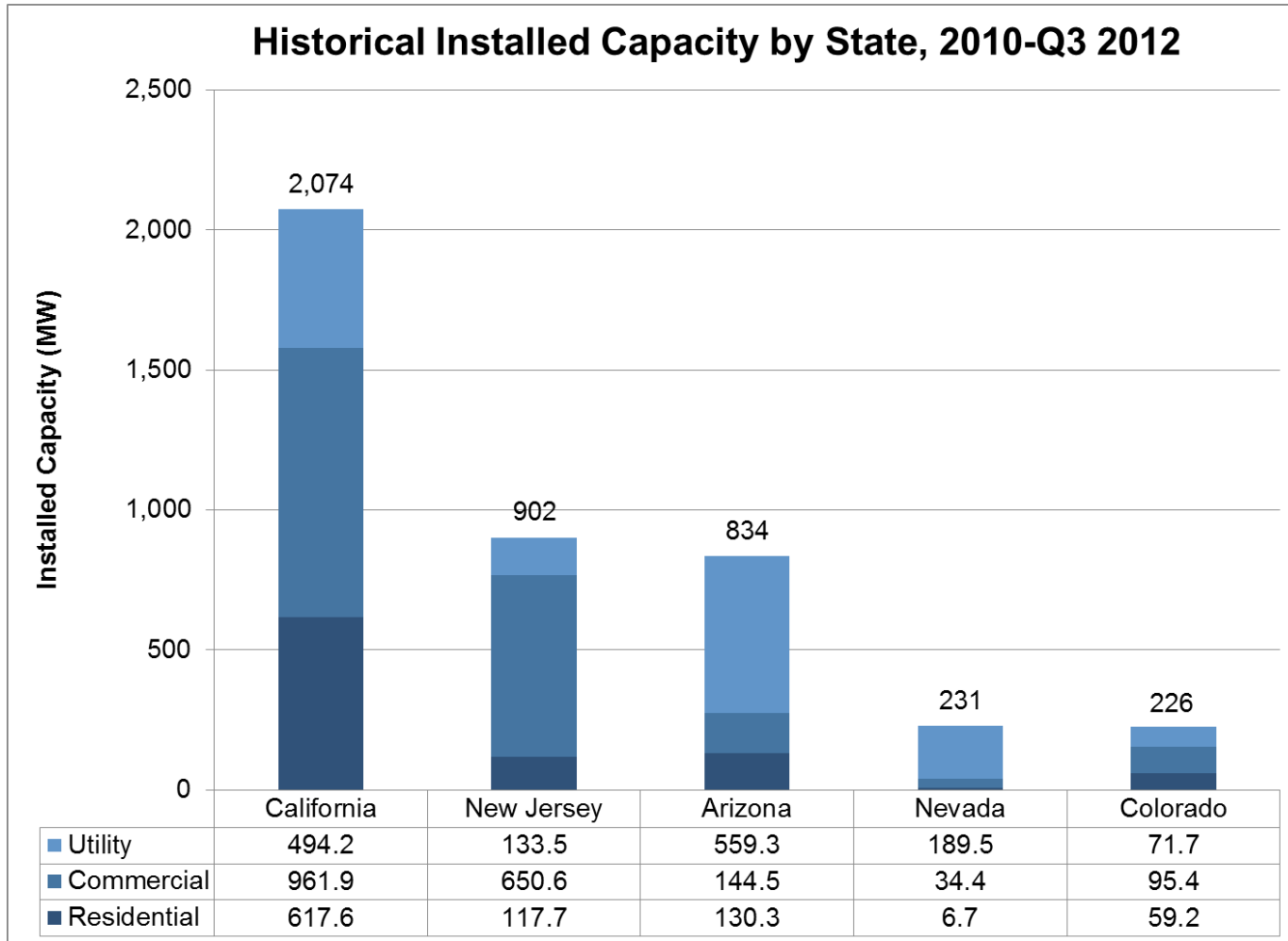
- U.S. Solar Market Overview
- Utility Scale Solar: Strategies for Success
- Distributed Generation & Avoided Cost
- Utah DG Tipping Point Analysis
- Decisions to Steer UT's Generation Portfolio

U.S. Solar Market Overview



Source: U.S. Solar Market Insight

U.S. Solar Market Overview



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Utility Scale Solar: Strategies for Success

- Renewable Portfolio Standard (RPS) → most basic driver of successful state level solar markets
- Above & Beyond: Utility PV Programs
 - *Arizona:*
 - APS AZ Sun Program: 200 MW by 2015
 - *California:*
 - Utility Owned Generation & Power Purchase Agreement Programs: 1.3 GW from three Investor Owned Utilities
 - Renewable Auction Mechanism: 1.5 GW, 4 auctions
- DOE Loan Guarantee Program
 - *Agua Caliente 333 MW*
 - *California Valley Solar Ranch 293 MW*

Distributed Generation & Avoided Cost

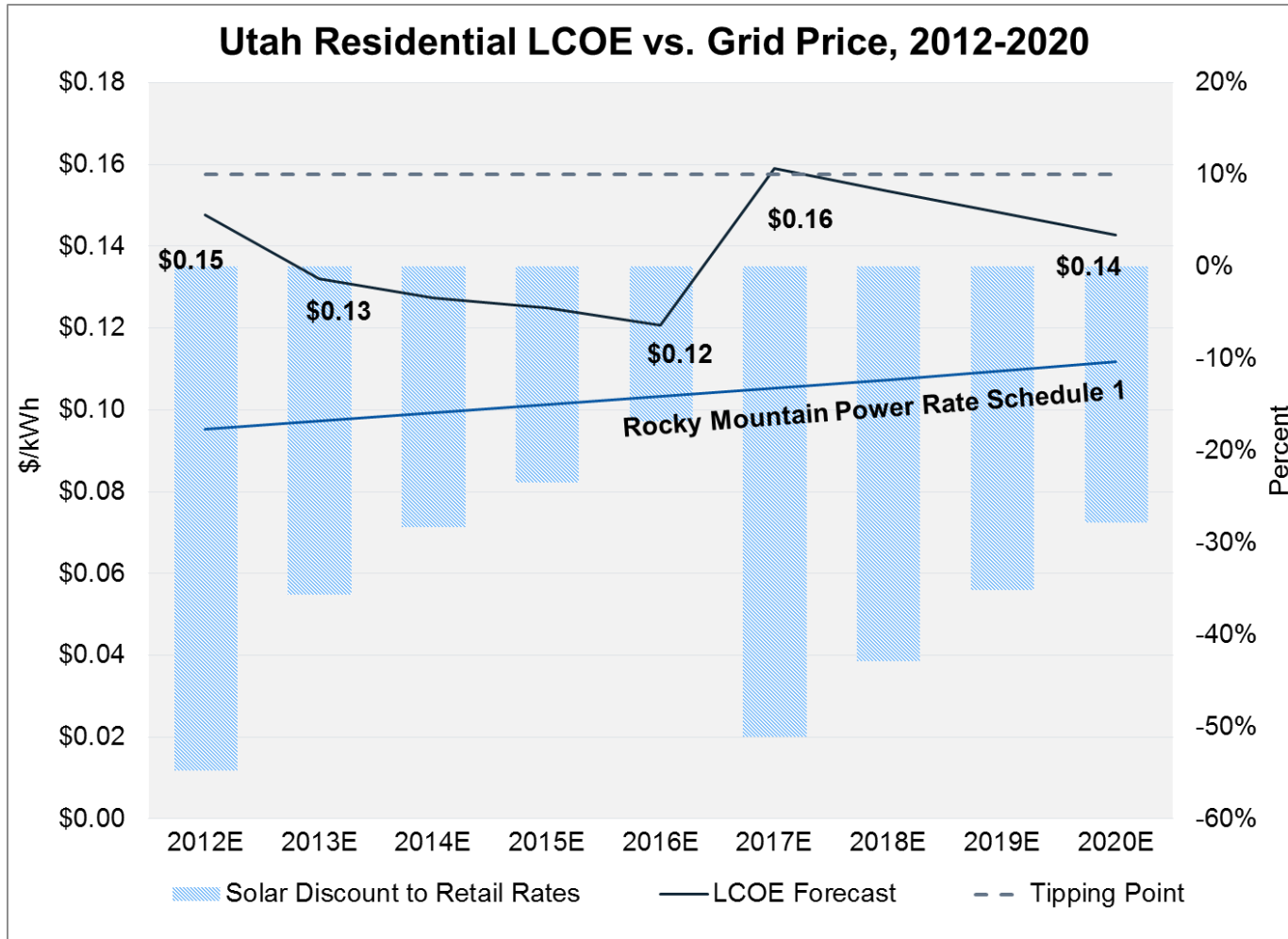
- What makes a particular state market appealing?
 - **Insolation**
 - **Retail Electricity Pricing**
 - *Rate Design*
 - Time-of-Use Pricing
 - Demand & Standby Charges
 - *Avoided Cost = Generation Charge*
 - **Installed Cost**
 - *Cash Incentives*
 - *Soft Costs*

DG Tipping Point Analysis: Utah

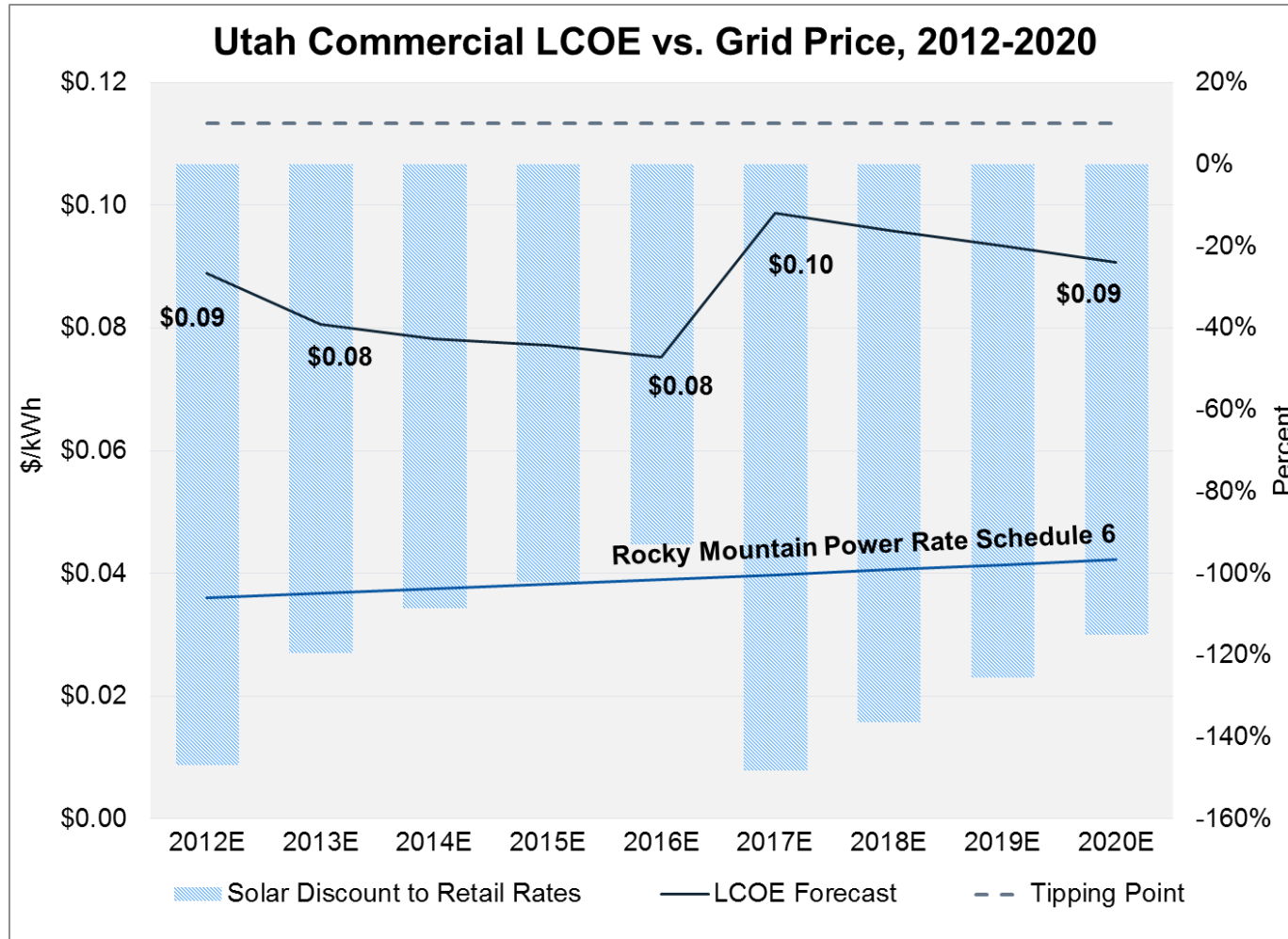
- “Post-incentive” world
 - *Worst case scenario*
 - *Investment Tax Credit through 2016*
- Real Levelized Cost of Energy (LCOE)
- Benchmark for a good deal = 10% end customer savings

	Residential	Commercial
Technological Assumptions	2012	2012
Site Type	Single family residence	For profit commercial rooftop
City	Salt Lake City	Salt Lake City
Utility	Rocky Mountain Power	Rocky Mountain Power
Insolation (kwh/m2/day)	6.2	6.2
DC System Capacity (kw)	5	500
System Lifetime (yrs)	25	25
Annual Output degradation	0.5%	0.5%
Financing Assumptions		
Federal Tax rate	28%	35%
Equity financing	0%	30%
Debt financing	100%	70%
Equity required return	0%	11%
Debt required return	7.5%	7.0%
WACC	7.5%	8.2%
Inflation	2.0%	2.0%
Discount Rate	5.5%	6.2%
Cost Assumptions		
Installed cost (\$/w)	\$4.01	\$3.30
System cost (\$)	\$20,042.50	\$1,647,990.50
Fixed O&M cost (\$/kw/yr)	\$25.00	\$25.00
Variable O&M cost (\$/mwh)	\$1.10	\$1.10
Incentives		
Federal tax credit (% of expenditures)	30%	30%

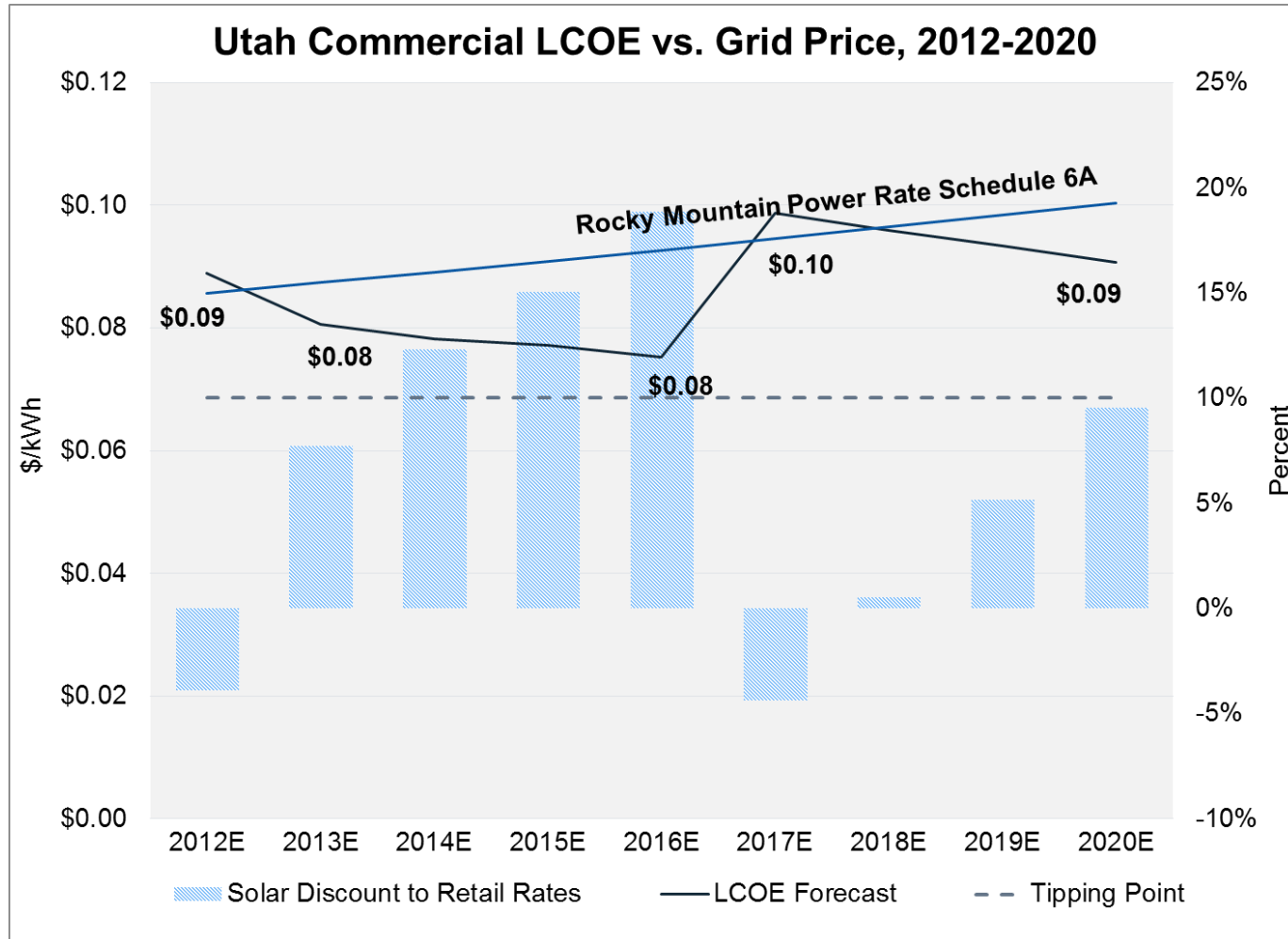
DG Tipping Point Analysis: Utah



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DG Tipping Point Analysis: Utah



Steering UT's Generation Portfolio

- **Utility:**
 - Renewable Portfolio **Goal** → **Standard**
 - *Carve out for solar: not necessary, but preferred*
 - PV Capacity Generation Programs
- **Commercial & Residential:**
 - Unsubsidized PV not cost effective for most customers
 - *Commercial w/ Time-of-Use Rate is the exception*
 - Cash incentives still needed to lower installed cost

Thank You!

U.S. Solar Market Insight Report – Q3 2012

